Amendment of the claims under Article 19

What is claimed is:

1. (Amended) A fiber optic communication system comprising: an arrayed waveguide grating (AWG) that has N optical input ports (where N is an integer greater than or equal to 2) and N optical output ports, and that has a routing function that outputs to predetermined optical output ports in accordance with a wavelength of optical signals inputted to respective optical input ports, and M (where M is an integer no smaller than 2, nor greater than the integer N) network-node equipments each having an optical input port and an optical output port, an optical output port of said AWG and an optical input port of each of said network-node equipments, and an optical input port of said AWG and an optical output port of each of said network-node equipments being connected respectively via optical transmission paths so as to form a geometrically star-shaped physical star topology having the AWG in the center,

wherein said network-node equipments comprise a wavelength tunable light source unit, and a device of wavelength switching that switches the wavelength of said optical signals in order to dynamically change a logical network topology that indicates a geometrical form of routes of the optical signals used for transmitting/receiving data (hereunder referred to as optical signals) between network-node equipments.

2. A fiber optic communication system according to claim 1, wherein said network-node equipments belong to at least one or more logical network topologies, and configure two or more mutually independent logical network topologies.

3. A fiber optic communication system according to claim 1, wherein said wavelength switching device switches wavelengths of optical signals when connecting or

transferring the network-node equipments belonging to a predetermined logical network topology, to another logical network topology.

4. A fiber optic communication system according to claim 1, wherein a logical network topology is configured with two or more network-node equipments, and said wavelength switching device switches wavelengths of optical signals so that at a predetermined time, all of said two or more network-node equipments configure a new logical network topology that is different from said logical network topology.

5. A fiber optic communication system according to claim 1, wherein said logical network topology configures at least one kind of either: a ring-shaped logical network topology having geometrically a ring shape, a star-shaped logical network topology having a star shape, and a mesh-shaped logical network topology having a mesh shape, or configures a logical network topology that is a combination of these.

6. A fiber optic communication system according to any one of claim 1 to 5, wherein said wavelength switching device comprises a wavelength tunable light source unit capable of changing the wavelength of an output signal, and a wavelength tunable optical receiver unit capable of selecting the wavelength of a receiving optical signal; and

said wavelength tunable light source unit comprises L (L being an integer no smaller than 2, nor greater than M) optical elements installed therein, said optical elements comprising an elemental structure in which a wavelength tunable laser and a modulator are connected in series or mutually integrated, or comprising a semiconductor laser diode with direct modulation capability, and being connected by an Lx1 optical coupler; and

said wavelength tunable optical receiver unit comprises L (L being an integer no smaller than 2, nor greater than M) optical elements installed therein, said optical elements comprising an optical receiver and a wavelength tunable filter connected in series with the optical receiver and passing only a predetermined wavelength, and being connected to an Lx1 optical coupler.

Explanation under the provision of Article 19 (1)

In the cited documents 1, 2 and 3, the network-node equipments and the 8×8-AWG are connected by a single optical fiber. As the connection configuration, the optical fiber is connected to each of the eight input ports of the AWG, and the remaining 8 output ports of the AWG are not connected to the network-node equipments.

On the other hand, in the present invention, in the case where the number of input/output ports of the AWG is made the same as in the description in the citations, the configuration becomes one where the optical input ports and optical output ports of the network node equipments are respectively connected to the optical output ports and the optical input ports of the 8×8-AWG by optical fiber. Consequently, the present invention is different from the cited documents in the construction of the optical network itself. Moreover, in the cited documents 1, 2, 3, the optical signal from all of the network-node equipments reach to the equipment having a loop-back and a wavelength conversion function, and a communication path in the optical layer is applied. If a fault occurs in the network-node equipment, or the optical fiber is cut, the network can be maintained by means of a detour which is reconfigured by the relevant equipment. However if a fault occurs in this equipment, communication between all of the network-node equipments is cut off, and the network stops. In the present invention however, there is no communication path in the optical layer such as used in the equipment in the cited references. Therefore the location where the fault occurs is limited to the optical node equipment, or the optical fiber. As a result, the reliability of the network is considered to be higher than that in the cited references 1, 2, 3.

Accordingly, the claims are considered to be valid from the point of novelty and inventive step.

The amendments in claim 1: ".....each having an optical input port and an optical output port....." and ".....an optical output port of said AWG and an optical input port of each of said network-node equipments, and an optical input port of said AWG and an optical output port of each of said network-node equipments being connected respectively via optical transmission paths....." have support in the first embodiment and in FIG. 1-2. Moreover the amendment "..... said network-node equipments comprise a wavelength tunable light source unit....." has support in FIG. 2-2.